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New York University NASA-Ames Grant NGR-33-016-201 Study of Transonic Flow Over Swept Wings

Final Technical Report

The contract was initiated as part of an effort to design shockless airfoils that would be appropriate for experimental work on R. T. Jones' concept of a supersonic transport with an oblique wing. This led to the early development of a series of computer codes for the design and analysis of airfoils and wings in two-dimensional and three-dimensional transonic flow. These were the first codes of their kind to become widely accepted by the aircraft industry as a primary design tool. The codes eventually came to supersede two-dimensional testing of airfoils in the transonic regime. The NYU oblique wing 3-D code was the forerunner of the later swept wing code FLO22, which achieved wide recognition. Work currently continues on improved methodology for such codes. More specifically, we have developed techniques to incorporate the effect of an engine or fuselage in the inverse design code FL22INV while using a minimum of computer resources.

(NASA-CR-173799) STUDY OF TRANSONIC FLOW OVER SWEPT WINGS Final Technical Report Abstract Only (New York Univ., New York.) 3 p HC A02/MF A01 CSCL 01A

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List of Publications:

- Supercritical Wing Sections II, by Frances Bauer, Paul Garabedian, David Korn and Antony Jameson, Springer-Verlag, Volume 108, 1975.
- Accelerated Iteration Schemes for Transonic Flow Calculations Using Fast Poisson Solvers, by Antony Jameson, March 1975 (COO-3077-82).
- Computation of Wave Drag for Transonic Flow, by P. R. Garabedian, Journal D'Analyse Mathematique (1976).
- A Systematic Method for Computer Design of Supercritical Airfoils in Cascade, by Paul Garabedian and David Korn, Communications on Pure and Applied Mathematics (1976).
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- Transonic Flow Theory of Airfoils and Wings by P. R. Garabedian, 13th Annual Meeting, November 1 3, 1976, Society of Engineering Science, Hampton, Va.
- Transonic Flow Past a Swept Wing, by Antony Jameson and D. A. Caughey, June 1977 (COO-3077-140).
- A Well Posed Boundary Value Problem in Transonic Gas Dynamics, by Jose M. Sanz, February 1978 (COO-3077-149).
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